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Optical fiber array for optical wave guide - has synthetic resin made ferrule with multiple V-grooves formed parallelly to hold optical fiber and transparent presser lid to press optical fiber
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Patent Family

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Patent Details

Patent	Kind	Language	Page	Main IPC	Filing Notes
JP 11174274	A		8	G02B-006/36	

Abstract:

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NOVELTY - A synthetic resin molded ferrule (1) consists of multiple grooves (1a) arranged parallelly at predetermined pitch to hold the optical fibers (3a). A transparent presser lid (2) is provided to press the optical fiber held in the groove. The lid permits ultraviolet rays of wavelength equal to 350 nm.

DETAILED DESCRIPTION - The coefficient of linear expansion for synthetic resin ferrule is below 1 multiply 10⁻⁵/ deg. C. The resin consists of silicon dioxide filler with filling factor of 85 wt% or more. A beam like support is provided along longitudinal direction to both sides of V-grooves in the ferrule. The rear end of ferrule consists of hilt shaped projection along the beam support. The V-groove angle is set to 80-100 deg. . The width of the presser lid is 0.05-0.2 mm, smaller than the distance in-between the inner wall of the beam support. The periphery of presser lid is chamfered. The optical fiber core wire (3) are of two sheets, consisting optical fiber and coated optical fiber. The mounting base of the ferrule for mounting the coated optical fiber core is sloped or stopped to the rear side of V-groove. The distance between the mounting base and the coated optical core is 0.15 mm or less.

An **INDEPENDENT CLAIM** is also included for manufacturing method of metallic mold which involves the V-groove with pitch equal to the optical fiber outer diameter formed by cutting with single crystal diamond bit.

USE - For optical devices like optical wave guide.

ADVANTAGE - The resin made ferrule consisting V-grooves eliminates fracture and the smaller coefficient of linear expansion, thereby provides more security for the optical fiber. The beam like support provided to both sides of V-groove of the ferrule performs easier positioning of the presser lid. The leakage of adhesive is prevented. The distortion of ferrule is reduced due to temperature change by providing transparent presser lid.

DESCRIPTION OF DRAWING(S) - The figure shows the perspective view of the optical fiber array.
(1) Ferrule; (1a) V-groove; (2) Presser lid; (3) Optical fiber core wire; (3a) Optical fiber.

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